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IDENTIFICATION AND INTERPRETATION OF TECTONIC FEATURES FROM
ERTS-A IMAGERY

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and the San Bruno coastline for the best fit, while comparing the ERTS coast to the ONC mapped coast, the following information was obtained: The most dramatic error is Isla Tortuga which is mapped 9 to 9.5 km to the west of its photo location. The coastline from Bahia Santa Ana, through Santa Rosalia, to just NW of San Bruno, is about 2 km, south of the ERTS image coast. Punta Concepcion and Punta Teresa are mapped 1.5 to 2 km to the north of the photo. It is notable that with no amount of shifting will the two mapped coastlines produce a perfect fit.

MSS 1043-17014: This ERTS photo shows the size of the four islands, Isla San Juanito, Isla Maria Madre, Isla Maria Magdalena, and Isla Maria Cleofas, to be much smaller than the ONC map depicts them. Using the coastline of Mexico, near Tuxpan, as a perfect fit between the ONC map and the ERTS imagery, the errors in the mapped islands are as follows:

- Isla San Juanito: ONC map shows it located about 5 km north of its ERTS location.
- Isla Maria Madre: ONC map shows the northern and southern coasts to be approximately 2 km larger in both directions.
- Isla Maria Magdalena: The mapped western tip is 5 km to the SW of the photo, and the eastern tip is 2 km to the NE of the ERTS location.
- Isla Maria Cleofas: ONC map shows 2.5 km more of eastern coast that is approximately 2 km wider in a north-south direction.

B. Southern California

ERTS MSS 1018-18010: We observed a prominent zone of structural and physiographic lineaments extending approximately from San Fernando, Los Angeles County towards the Oxnard area in Ventura County in an east-northeast trend. It was studied in more detail utilizing U-2 color infrared imagery and aerial photographs.

In Ventura County several previously unknown faults within this zone were identified and their traces plotted on large scale maps and 1:60,000 aerial photographs. Field checking at many points in Simi Valley and Simi Hills and in the Conejo Valley showed that some lineaments correspond to fault scarps or fault line scarps. This important fault zone is significant because it trends parallel to and partly coincides with a recent belt of seismicity related to the San Fernando 1971 earthquake reported by J. H. Whitcomb, C. R. Allen, J. D. Garmany, and J. A. Hileman, "San Fernando Earthquake Series, 1971: Focal Mechanisms and Tectonics," Reviews of Geophysics and Space Physics, Vol. 11, No. 3, pp. 693-730, August 1973.

Practical Applications:

The San Fernando-Oxnard fault zone may prove to be susceptible to seismic activity. To say the least, it should be considered in assessing the seismic hazards in this fast growing area of Ventura County. As a result of our discussions with Ventura County Planning Department, we requested from NASA

TYPE I PROGRESS REPORT FOR PERIOD AUGUST 1 TO SEPTEMBER 30, 1973

TITLE: Identification and Interpretation of Tectonic Features from
ERTS-A Imagery

NASA Contract No. NAS5-21767

GSFC ID No.: PR001, Dr. Monem Abdel-Gawad, Principal Investigator

Problems: None

Accomplishments:

- 1) Earthquake epicenter plots were completed for the entire length of the Gulf of California including the Mexican and Baja borderlands.
- 2) Significant faults, linear discontinuities, and tectonic features were identified and correlated to known structures both on land and gulf bottom topography.
- 3) Several areas of supposedly similar latitudinal position prior to the Baja northward movement were correlated in an effort to identify any displaced features.
- 4) Plotting of known mineral deposits were completed for 12 ERTS images in Nevada, Arizona, and New Mexico. Progress has been made in correlation of known mineral deposit clusters to local and regional structural features.

Significant Results:

A. Baja California

Mapping errors were found in Baja California and in the coastal islands off mainland Mexico. When comparing the ERTS imagery with the United States Air Force Operational Navigation Charts, the following results were obtained:

MSS 1032-17393: In this photo, the outline of Baja (taken from the ONC map) was best fitted to the actual ERTS image coastline. The coastlines showed definite mapping errors. Northwest of Santa Maria and Punta Final the coastlines from ERTS and the ONC map fit. Isla San Luis was mapped approximately 2 km to the west of its ERTS location. From Punta Final SE to Bahia de Los Angeles, the mapped coast is as much as 2.5 km to the SW of the photo coastline. Isla Angel de La Guarda is mapped 2 km to the west of the ERTS image, and Isla Smith is off about 1 km, also to the west. Southeast of Bahia De Los Angeles the land once again fits the ONC mapped coast. On the western side of Baja, between Santa Maria and Punta Maria, and south along Bahia Santa Rosalia, the map shows the coast approximately 1 to 1.5 km north of the photo coastline.

MSS 1066-17283: Using the mainland of Mexico (near Guaymas), Isla San Marcos,

Ames Research Center more recent U-2 coverage of Ventura County and vicinity. A cooperative effort of detailed fault mapping will be highly beneficial to the County's program of defining seismic hazards.

Lineaments in the alluvium identified in ERTS imagery were of particular interest to Kern County council of governments. According to a letter received from Bradley F. Williams, Principal Planner for Technical Assistance, the information and ERTS imagery which we made available to them "were beneficial in developing regional concepts in their studies relating to a seismic safety plan for Kern County."